XT3056QP3

仙童科技

GaAs MMIC Low Noise Amplifier
2～4GHz

Rev 1.0

Features

- Frequency：2～4GHz
- Gain：28dB
- Noise Figure：0.4 dB typ.　0.6dB max.
- Single Power Supply: +5V/30mA
- Output IP3：25dBm@2.3GHz
- Size：3mm×3mm×0.75mm

Typical Applications

- Wide Band Receiver
- High Density MCM
- EW

General Description

XT3056QP3 is a GaAs MMIC Low Noise Amplifier in QFN over molding surface mount package, which operates between in 2~4GHz.

The amplifier can provide 29dB of gain, 10dBm of output P_{-1}dB and 0.4dB noise figure and from a 30mA supply current

Electrical Performance (T_A=25℃,V_d=+5V,I_D=30mA,Z_0=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range		2～4		GHz
Gain	25	28	32	dB
Gain Flatness	—	±0.75	—	dB
Reverse Isolation	—	39	—	dB
Input VSWR/ Output VSWR	—	1.5	1.75	: 1
Noise Figure	—	0.4	0.6	dB
Output P_{-1}dB	8	10	—	dBm
Output IP_3	—	25*	—	dBm
Supply Current (I_D)	—	30	36	mA
Supply Voltage (V_D)	—	5	—	V

*Pout/Tone=0dBm Fc=2.3GHz, △f=1MHz

Absolute Maximum Ratings

Maximum Input Power	+17dBm，CW，1min	Operating Temperature	-55℃～+85℃
Channel Temperature	+150℃	Storage Temperature	-65℃～+150℃
Supply Voltage	7V		

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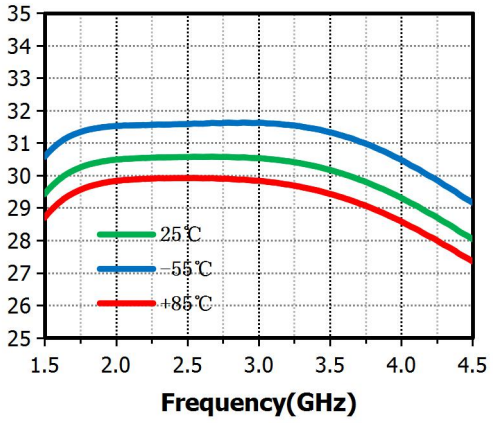
Typical Performance Curve

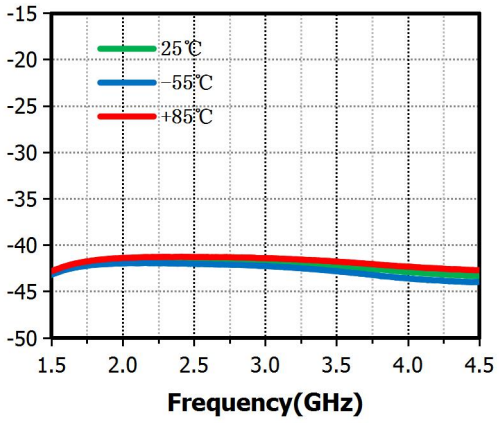
VD=+5V，IDQ=30mA

The following curves are taken from XT3056QP3 evaluation board. De-embedding operation has been Implemented.

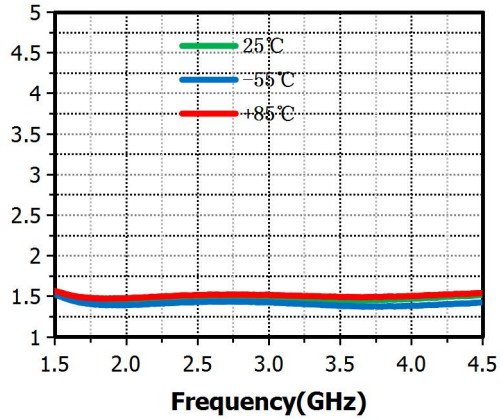
Small Signal Gain(dB) vs.Temperature



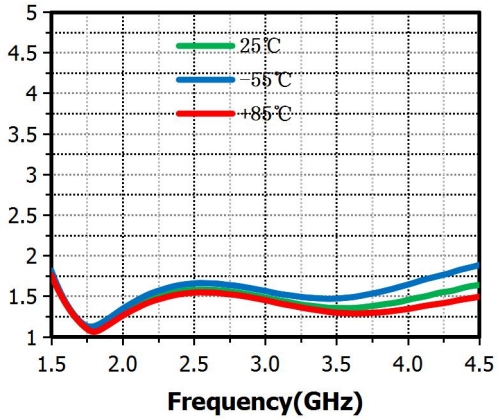
Reverse Isolation(dB) vs.Temperature



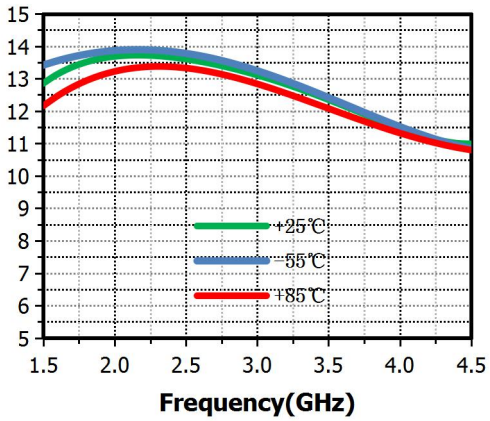
Input VSWR(:1) vs.Temperature



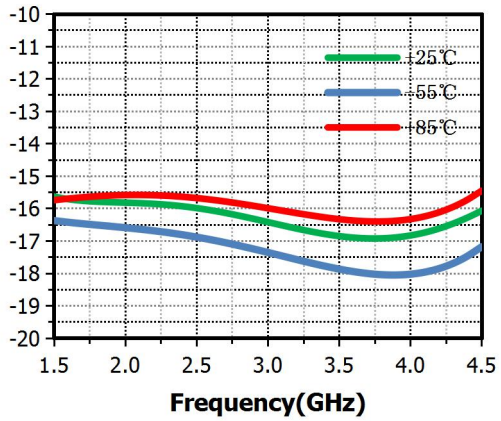
Output VSWR(:1) vs.Temperature



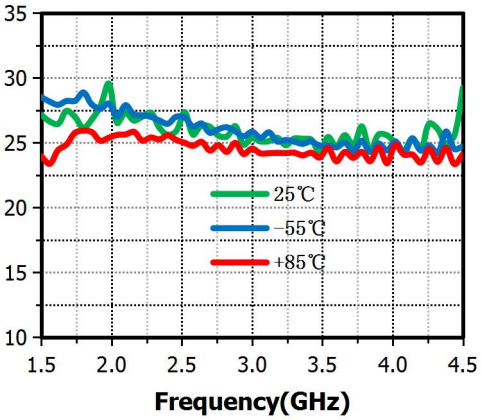
Output P_{-1}dB(dBm) vs.Temperature



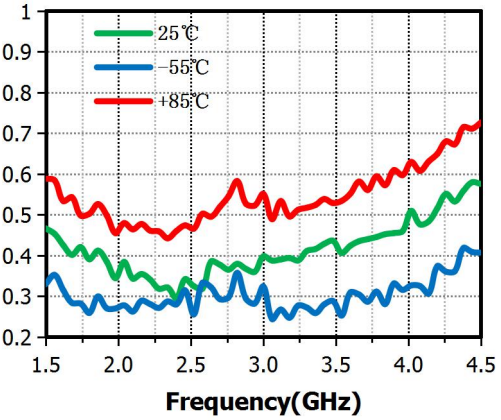
Input P_{-1}dB(dBm) vs.Temperature



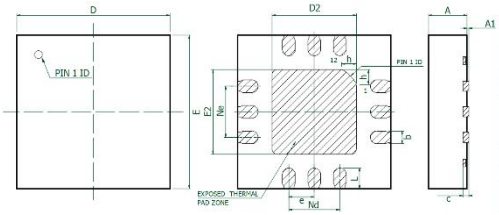
Output IP_3(dBm) vs.Temperature



Noise figure(dB) vs.Temperature

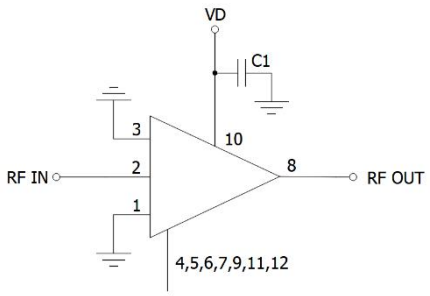


Outline Drawing



DIM	MILLIMETER		
	MIN	NOM	MAX
A	0.65	0.75	0.85
A1	–	0.02	0.05
b	0.20	0.25	0.30
c	0.18	0.20	0.25
D	2.90	3.00	3.10
D2	1.55	1.65	1.75
e	0.50BSC		
Ne	1.00BSC		
Nd	1.00BSC		
E	2.90	3.00	3.10
E2	1.55	1.65	1.75
L	0.35	0.40	0.45
h	0.25	0.30	0.35

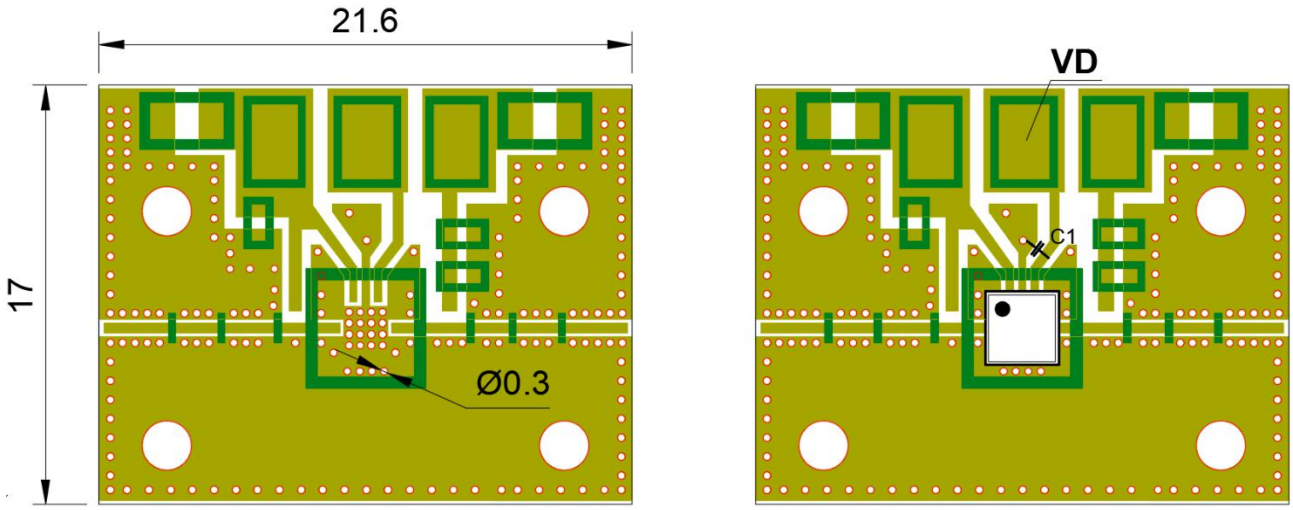
Application Circuit



Pin Function

Pin No.	Description	Pin No.	Description
1	Connect to ground	7	Connect to ground
2	RF input, AC Coupled	8	RF output, AC Coupled
3	Connect to ground	9	Connect to ground
4	Connect to ground	10	VD
5	Connect to ground	11	NC or Connect to ground
6	Connect to ground	12	NC or Connect to ground

XT3056QP3 Evaluation Board



The Evaluation board is a 2-layer board fabricated using Rogers 4350 t=0.254 and using best practices for high frequency RF design. The RF input and RF output traces have a 50 Ω characteristic impedance.

Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1	0.047uF	—	ANY	0402

Attention:

1. The moisture resistant grade of products is 2a, the storage environment ≤30° C/60% RH， The surrounding workshop life is 4 weeks.